REMARKS

Claim 21 has been added. Claims 1-14 and 16-21 remain for further consideration. No new matter has been added.

The objections and rejections shall be taken up in the order presented in the Official Action.

2. Claims 1-14 and 16-20 currently stand rejected for allegedly being obvious in view of Haan's "True-Motion Estimation with 3-D Recursive Search Block Matching" (hereinafter "Haan").

CLAIM 1

Claim 1 recites a method for determining a selection vector which represents a displacement vector for a displacement of an image area from a first position in a first image to a second position in a second image. The method includes the steps of:

> "a) Supplying a set of prediction vectors;
> b) Supplying a set of test vectors;
> c) Selecting at least one test vector from the set of test vectors, and performing an image comparison between a first image area in the first image and a second image area in the second image to obtain an image comparison result, where a position of the second image area is displaced relative to the first image area by the at least one selected test vector;
> d) Comparing the at least one selected test vector with at least one selected prediction vector to obtain at least one vector comparison result for each selected test vector;
> e) Supplying at least one quality characteristic for each selected test vector from both the image comparison result obtained for each selected test vector, and from the vector comparison result for each selected test vector;
> f) Determining a ranking order of the quality characteristics; and
> g) Selecting one of the selected test vectors as the selection vector from the set of test vectors based on the ranking order of the quality characteristics." (cl. 1, emphasis added).

The Official Action contends that Haan teaches "*comparing the at least one selected test vector with at least one selected prediction vector to obtain at least one vector comparison result for each*

selected test vector (page 373, col. 1 and eq. 26)" where "*||U(X,t)|| represents the comparison result between the given prediction vector and its corresponding test vector.*" (Official Action, pg 4). The Action further contends that Haan teaches "*supplying at least one quality characteristic for each selected test vector from both the image comparison result obtained for each selected test vector and from the vector comparison result for each selected test vector (page 373, col. 1 and eq. 26)*" where the "*quality characteristic used in Haan is e(C,X,t)....*" (Official Action, pg 4). Applicants respectfully submit that the aforementioned characterization is an improper reading of Haan.

First, Haan teaches in equations (16) and (17) that the update vector $\underline{U}$ is a function of the displacement vector $\underline{D}(\underline{x}, t)$. "*The resulting estimated displacement vector $\underline{D}(\underline{x}, t)$... equals the candidate vector $\underline{C}(\underline{X}, t)$ with the smallest error $e(\underline{C}, \underline{X}, t)$.... Error are calculated as summed absolute differences (SAD): $e(\underline{C}, \underline{X}, t) = \Sigma |F(\underline{x}, t) - F(\underline{x} - C, t - n.T)|$ where $F(\underline{x}, t)$ is the luminance function and T the field period.*" (Haan, pg 369, col. 1). That is, the displacement vector is chosen to correspond to the candidate vector having the smallest error $e(\underline{C}, \underline{X}, t)$. Thereafter, Haan teaches in equations (20) and (22) that the update vector $\underline{U}_a(\underline{X}, t)$ is an element of the set $\{\underline{0}, \underline{lut}(N_{bl}(\underline{x}, t) \bmod p)\}$, where N_{bl} is the output of a block counter, $\underline{lut}$ is a look-up table function, and p is not a factor of the number of blocks in a picture. (Haan, pg 372, col. 1) Thus, the norm of $\underline{U}(\underline{X}, t)$, (i.e., $\|\underline{U}(\underline{X}, t)\|$), as used in equation (26), is a function of the candidate vector. That is, $\|\underline{U}(\underline{X}, t)\|$ is not a function of the candidate vector and the prediction vector. Therefore, it is respectfully submitted that $\|\underline{U}(\underline{X}, t)\|$ is incapable of teaching or suggesting the feature of "*comparing the at least one selected test vector with at least one selected prediction vector to obtain at least one vector comparison result for each selected test vector....*" (cl. 1, emphasis added). Consequently, Haan is also incapable of teaching or suggesting obtaining at least one vector comparison result. Therefore, Haan also fails to teach or suggest the feature of "*supplying at least one quality characteristic for each selected test vector from*

both the image comparison result obtained for each selected test vector, and from the vector comparison result for each selected test vector" (cl. 1, emphasis added).

Second, the Official Action acknowledges that "*Haan fails to disclose determining a ranking order of the quality characteristics and selecting one of the selected test vectors as the selection vector from the set of test vectors based on the ranking of the quality characteristics.*" (Official Action, pg 5). Thereafter, the Official Action gives official notice that "*there are a wide variety of operations that could be used to find a test vector with the smallest error, including calculating the error of multiple test vectors, sorting them by maximum or minimum error and then appropriately selecting the desired vector by rank.*" (Official Action, pg 5). Applicants respectfully disagree with and traverse the aforementioned official notice. The Official Action has only given a vague assertion that the features of determining and selecting are known in the art and combinable with the Haan reference. Assuming, without admitting, that these feature are known in the art, there is no evidence that these feature could even be properly combined with the teachings of Haan. Specifically, Haan teaches that "[*for*] *the 3-D RS block matcher, the spatial consistency could guarantee that, after reaching a converged situation at the boundary of a moving object, no other vectors will be selected.*" (Haan, pg 372). Thus, Haan teaches a method of convergence to select a vector. Therefore, it would not be obvious to combine the features of "*determining a ranking order of the quality characteristics*" and "*selecting one of the selected test vectors as the selection vector from the set of test vectors based on the ranking order of the quality characteristics*" with the teachings of Haan. (cl. 1).

CLAIMS 2-14 AND 16-18

It is respectfully submitted that these rejections are now moot since claim 1 is patentable at least for the reasons as set forth above.

CLAIM 19

It is respectfully submitted that claim 19 is patentable for at least the same reasons as set forth above with respect to claim 1.

CLAIM 20

It is respectfully submitted that this rejection is now moot since claim 19 is patentable at least for the reasons as set forth above.

CLAIM 21

It is respectfully submitted that claim 21 is patentable for at least the same reasons as set forth above with respect to claim 1. Additionally, Haan does not teach or suggest the feature of "*generating an updated set of test vectors which includes the test vector selected as the selection vector*...." (cl. 1, emphasis added). In contrast, Haan teaches that "*[b]oth estimators (a and b) in the algorithm thus far produce four candidate vectors each ($\underline{C}_n$) by updating their spatial predictions $\underline{S}_a(X,t)$ and $\underline{S}_b(X,t)$.*" (pg 370, col. 2). That is, Haan teaches updating the candidate vectors. Therefore, Haan fails to teach or suggest the feature of "*generating an updated set of test vectors which includes the test vector selected as the selection vector*...." (cl. 1, emphasis added). As a result, it is respectfully submitted that claim 21 is not rendered obvious in view of Haan.

For all the foregoing reasons, reconsideration and allowance of claims 1-14 and 16-21 is respectfully requested.

If a telephone interview could assist in the prosecution of this application, please call the undersigned attorney.

Respectfully submitted,

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